

Protect Facilities From Infection

When October 2007 dawned, the only thing that Catherine Anne Bentley, Shae Kiernan, and Ashton Bonds had in common was that they were in the process of winding their way through various stages of their educations. Catherine was a 4-year-old from Salisbury, New Hampshire, who was beginning her educational journey as a member of the pre-school class at Boscawen Elementary School. Shae was an 11-year-old sixth-grader from Vancleave, Mississippi. Ashton was a 17-year-old from Bedford, Virginia, who was in the midst of his senior year at Staunton River High School.

By October 15, Catherine, Shae, and Ashton had something else in common: all three had lost their lives as a result of contracting Methicillin-Resistant *Staphylococcus aureus* (MRSA), an extremely virulent strain of staph infection that does not respond well to antibiotics like methicillin. Catherine passed away after developing pneumonia as a result of her MRSA infection, while Ashton—who had originally complained of a pain in his side that doctors thought at first might have been appendicitis—succumbed when the MRSA infection had spread to his kidneys, liver, lungs, and heart. Shae was diagnosed with MRSA on October 12, 2007 after she had initially developed a fever, and she died three days later.

Unfortunately, the deaths of Catherine, Shae, and Ashton were just the most tragic examples in 2007 in what was a landmark year for MRSA and its affect on educational communities. According to a *New York Times* report, elementary and secondary schools from Connecticut to Mississippi, New Hampshire to California, and North Carolina to Washington had to be closed at some point during the school year as cleaning crews disinfected buses, lockers, restrooms, and classrooms in the response to the threat of a MRSA outbreak.

BY CHRIS TORRY



MULTI-TASKING:

Protecting Your Facilities From Infectious Diseases



THE CHALLENGES

According to a study commissioned by the U.S. Centers for Disease Control and Prevention (CDC), and reported by *The Journal of the American Medical Association* in its—ironically—October 2007 issue, hospital visits for staph infections rose by 62 percent between 1999 and 2005. When considering cases of MRSA, CDC research has shown that in 1974 MRSA infections accounted for only 2 percent of the total number of staph infections that were reported. That number increased to 22 percent in 1995 and, by 2004, was up to 63 percent.

In the 2007 report that appeared in *JAMA*, the CDC estimates that 94,360 people in the United States developed a serious invasive (those that enter the bloodstream or destroy flesh) MRSA infection in 2005 and, of that number, 18,650 died during a hospital stay, more than are killed by AIDS every year in this country. This equates to a rate of 31.8 per 100,000 residents who developed invasive MRSA infections in 2005. While the word most closely associated with staph infections 60 years ago was “eradication” as the use of antibiotics like penicil-

lin became more widespread, many in the medical community are now fearful that another “E” word—epidemic—may most accurately describe the current state of staph infections, if not right now, then in the near future.

“This is an alarming number of infections and a very significant number of deaths,” said R. Monina Klevens, an epidemiologist for the CDC and a lead researcher on the study. “This is really a call to action for the healthcare facilities to do a better job of preventing MRSA.”

It’s no surprise that the safety of the student body is a top priority at every educational institution—from The Happy Camper Pre-School to The Ohio State University—meaning that these high-profile MRSA-related deaths and outbreaks have drawn much-needed attention to the cleanliness of school facilities as well as the hygiene of the student body.

Hand in (properly cleaned) hand with this increased attention on MRSA and its potentially deadly affects comes the results of a study undertaken by APPA’s Center for Facilities Research (CFaR). Cosponsored by APPA, the leading association for educational facilities professionals, and ISSA, the worldwide cleaning industry association, the *Cleanliness and Learning in Higher Education* study surveyed college students from five U.S. institutions of higher learning and came to the conclusion that there is a correlation between the cleanliness of a school’s facilities and the academic achievement of its students. These results confirmed the findings in a series of studies between 1993 and 2002 that showed that student achievement in primary and secondary educational settings is also linked to the physical condition of buildings and learning areas, i.e., the better the condition, the higher the achievement.

Headed by Dr. Jeffrey L. Campbell, chair of the undergraduate Facilities Management Program at Brigham Young University, with investigative assistance from Alan S. Bigger, director of facilities at Earlham College and a past APPA President, the survey was answered by nearly 1,500 students attending Brigham Young, Provo, Utah; Earlham, Richmond, Indiana; Troy University, Troy, Alabama; Truman State University, Kirksville, Missouri; and the University of New Hampshire, Durham, New Hampshire.

The students were asked to rate the cleanliness of their learning facilities based on the APPA’s Five Levels of Cleanliness, published in *Custodial Staffing Guidelines for Educational Facilities*:

- **Level 1—Orderly Spotlessness:** Surfaces are clean, orderly, and dust-free in appearance.
- **Level 2—Ordinary Tidiness:** Surfaces have light dust, smudges, and fingerprints, but are otherwise orderly and clean.
- **Level 3—Casual Inattention:** Surfaces have obvious dust, dirt, smudges, and fingerprints.
- **Level 4—Moderate Dinginess:** Surfaces have heavy dust, dirt, smudges, fingerprints, stains, and some trash and odors.
- **Level 5—Unkempt Neglect:** Surfaces have major accumulations of dust, dirt, smudges, fingerprints, and excessive trash and odors.

The Kentucky Cabinet for Health and Family Services recently produced a list of measures that should be taken in the battle to control or prevent staph infections:

- Keep wounds covered with clean, dry bandages
- Wash hands after touching infected skin or bandages. Put disposable wastes (dressings, bandages, etc.) in a separate trash bag and close the bag tightly before throwing it out with regular garbage.
- Advise family and other close contacts to wash their hands frequently. Caregivers should use gloves and wash hands afterward if they change your bandages or touch an infected wound or other objects that have been in contact with the wound or wound drainage.
- Do not share personal items (towels, wash cloths, soap, razors, clothing, uniforms, etc.) or other items that may have had contact with an infected wound or wound drainage
- Disinfect all non-clothing (and non-disposable) items that come in contact with an infected wound with a solution of one tablespoon household bleach mixed in one quart of water (must be prepared fresh each day) or a store-bought cleaning product that contains phenol, which is a mildly acidic and toxic coal byproduct used as a disinfectant
- Wash linens and clothes that become soiled with hot water and laundry detergent. Drying clothes in a hot dryer, rather than air-drying, also helps kill bacteria in clothes.
- Wash utensils and dishes in the usual manner with soap and hot water or use a standard home dishwasher
- Avoid participating in contact sports or in other skin-to-skin contact until an infected wound has completely healed

Of the students polled, 88 percent reported that the lack of cleanliness becomes a distraction at Level 3 and Level 4. Eighty-four percent reported that they need Level 1 or Level 2 cleanliness to create a positive learning environment. Nearly 80 percent responded that a lack of cleanliness has an impact on their health and that this lack of cleanliness can also affect allergies, spread germs, increase bug and rodent infestations, and promote higher stress levels.

"These findings provide a vital tool for facility service providers to reinforce the benefits of cleaning; there's also a great deal of public-relations power in that message if an institution can use its cleaning program to inform students and their families what it is doing to protect the well-being of its population," said ISSA Executive Director John Garfinkel on the ISSA website (www.issa.com). The full report is available at no charge to APPA and ISSA members at www.appa.org/bookstore/product_browse.cfm?itemnumber=438.

THE SOLUTION

Sounds like common sense, doesn't it? Keep educational facilities as clean as possible and the outbreak of potentially deadly MRSA incidents will be curbed, while students will also experience higher classroom achievement. It's in the process of determining the best way to clean an educational facility where the fly enters the ointment.

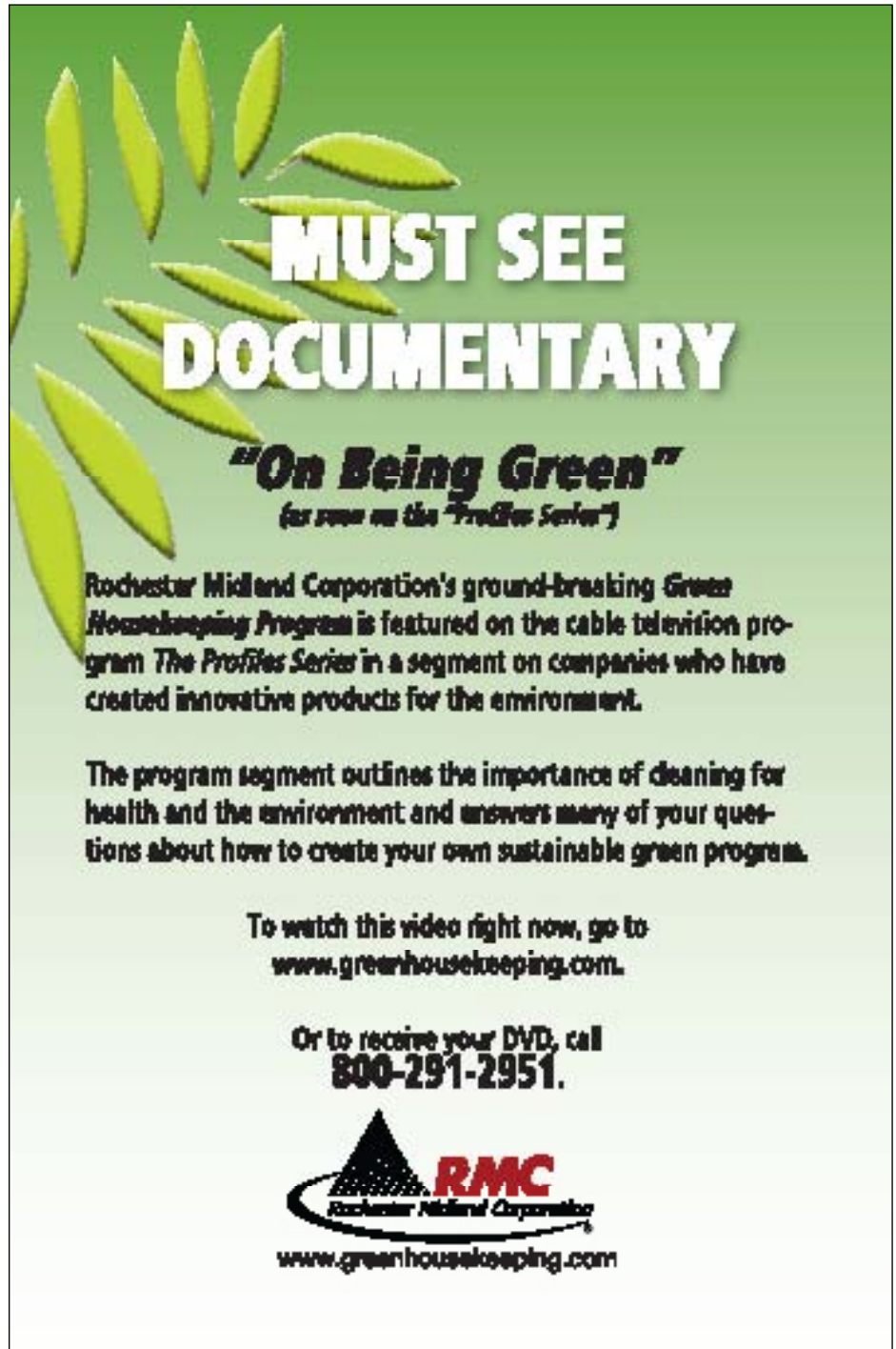
Through the years, traditional methods of sanitation—especially in restrooms—have involved often-unpleasant "hands on" cleaning, where the cleaning staff has to get down on its hands and knees and scrub floors, partitions, and the underside of counters and fixtures with a wide variety of hand-applied cleaning chemicals, which then had to be wiped off or swabbed up with a mop that oftentimes went back-and-forth into a bucket containing dirty water. This method of cleaning not only brings the cleaning staff into close contact with any germs or bacteria that might be present, but with its repetitive stooping, bending, and scrubbing, also takes a physical toll.

Therefore, this type of cleaning regimen can often lead to lowered employee morale, increased employee turnover, higher associated training costs, and—most

important to the public—ineffective cleaning practices.

To do away with this method of cleaning and sanitation, strides have been made in the development and implementation of automatic/touch-free cleaning systems for daily cleaning applications. The machines that are setting the standard in this growing market are affordable, battery-powered, self-contained portable-cleaning systems that use correctly dosed cleaning chemicals that are applied by spray nozzle using low-flow/low-pressure technology. With these

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systems, the chemicals do the cleaning, not high pressure. This low-pressure cleaning protects fixtures and grout from water damage and eliminates the spray-back of bacteria-contaminated water, all of which may occur with high-pressure (500+ psi) cleaning systems. Their design and operation also supports ongoing efforts to eliminate from public restrooms the bacteria that cause staph infections. *ISSA 447 Cleaning Times* shows that the use of touchless cleaning technology can reduce fixture-cleaning time by as much as 67 percent. In addition, touch-free cleaning systems are kind to the environment, with less water and chemicals used when compared with traditional cleaning methods.

Forest Hills School District is a unit school district located southeast of Cincinnati with 7,750 total students who attend six elementary schools, one middle school, and two high schools. Of the district's nine facilities, the flagship building is Wilson Elementary, which opened in 1959 and has been expanded twice in the ensuing five decades.

Kevin Reid, assistant head of maintenance and district supervisor of the custodial staff for Forest Hills School District, had employed traditional cleaning techniques in order to get

the building ready for the daily onslaught of students, PTA meetings, and other extracurricular and community activities that make up the daily life of an elementary school these days. In March 2007, his custodial staff began using an automatic/touch-free cleaning system for daily cleaning applications. Positive results were noted almost immediately.

"The guys at Wilson love it. It really helps them a lot. It's kind of neat that this is an older building, but it has a professional, friendly, and caring staff that provides the students a clean, nice environment that helps them produce good test scores," said Reid. "That is the case at all of our schools, and we take a lot of pride in that."

CONCLUSION

The level of personal hygiene will always be at the whim of the individual, but when it comes to facilities, operators and managers have no recourse but to provide the most hygienic surroundings possible for their patrons. While the rate of reported MRSA outbreaks continues to grow alarmingly, the high-profile events of 2007 have shed some much-needed light on the importance of cleanliness in educational facilities. And now, along with this disease prevention, come the results

of the APPA study that indicates that cleaner educational settings also lead to higher academic achievement.

With this added emphasis on cleanliness, new technologies and revamped custodial processes provide the perfect solution to the cleaning needs of all manner of educational facilities. The desired results include eliminating the physical hardship on the custodial staff and helping provide not only a disease-free learning environment, but one that maximizes the abilities of the students who inhabit it. ⑤

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